# Tone King

## "20th Anniversary Imperial"

## User's Manual

**1.2 8/25/2015**

**Tone King Amplifiers**
**A division of Premier Builders Guild LLC**
**4401 Eastern Avenue, Bldg 45-2A, Box 38**
**Baltimore, Maryland 21224**
**www.toneking.com**
**mail@toneking.com**

# Note from the Builder

Thank you for choosing Tone King's "20th Anniversary Imperial" guitar amplifier. The Imperial was the very first production model built by Tone King, and the 20th Anniversary Imperial is a very special rendering of this classic model.

I designed the Imperial back in 1992-1993, with the idea of combining a clean rhythm tone inspired by a vintage blackface Deluxe Reverb with a lead tone inspired by a Tweed Deluxe. Then, as now, my design methodology involved not simply producing a clone of those vintage amps, but something much more. The idea was to deconstruct the sound of certain inspirational amps - identify the characteristics that make them great, but also identify the characteristics that I thought could be improved. Then, the design process became a matter of using any means possible to deliver more of the "good" characteristics and less of the "bad" ones. At the time, information about the construction of vintage amps like these was hard to come by, so I started from a blank slate, guided solely by my knowledge of engineering, technical skills, woodworking, and most importantly critical listening.

I eventually came to realize that getting the sound and feel I was after would require more than just getting the electronics right – an equal amount of effort would have to be put into the speaker cabinet design. A lot of the great tonal characteristics of those genuine vintage amps came not from the circuitry, but from the particular qualities of the speaker cabinet. The old cabinets had a certain sound quality that was lacking in newly made cabinets, and I put considerable effort into understanding how to tune a cabinet to achieve these qualities in a newly made cabinet. The photo at right shows a stack of test baffle boards from those early experiments, showing just a few of the many types of wood that I experimented with in order to achieve that wonderful sound and feel of a genuine 50 year old cabinet.

In the end, the Imperial turned out to have the right sound, right power level, and right features to make it a very successful small club amp for the past 20 years since its' introduction. I thank you for your purchase of this special version of the Imperial, and I hope you enjoy playing it as much as I do.

Best Regards,

Mark Bartel
Tone King Amplifiers, a division of Premier Builders Guild LLC

# Safety Instructions (Important !)

1. Please read these instructions, and keep them for reference.

2. Please follow all instructions described here.

3. Do not use this apparatus near water.

4. Clean only with a dry cloth.

5. Do not block any ventilation openings.

6. Do not operate near any heat sources such as radiators or heat registers.

7. Protect the power cord from being walked on or pinched, particularly at the plugs and at the point where they exit from the apparatus.

8. Only use attachments/accessories specified by the manufacturer.

9. Unplug this apparatus during lightning storms or when unused for long periods of time.

10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way. For example, if the power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

11. CAUTION: To disconnect the unit completely from the MAINS, unplug the unit. Turning the power switch off does not disconnect the unit completely from the MAINS.

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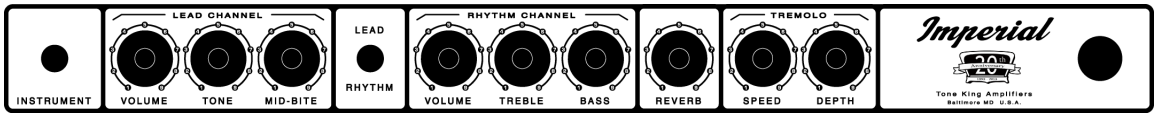
# 1. Front Panel Controls




## Two Preamp Channels – Lead and Rhythm

The Imperial has two separate preamplifier channels, each with its own unique voicing. You can switch between the channels with either the "Lead/Rhythm" switch (on the front panel) or with the "Channel" switch on the footswitch. When using the footswitch, you should set the front panel switch to the "Rhythm" position. You'll notice that the LED on the footswitch indicates the channel selected. When the LED is lit, the Lead channel is selected. When the LED is not lit, the Rhythm channel is selected.

## Rhythm Channel

The Rhythm channel includes controls for Volume, Treble, and Bass. This channel is designed to deliver a "vintage 1960's clean tone" – the type of tone you might associate with a well known brand of amplifier made in California during that period. This tone is characterized by a crisp, present top end, a slightly "scooped" midrange, and a full bottom end.

The Bass and Treble controls act much like they would on a genuine vintage amp of this type. The Imperial is a bit unique in that you'll find a wide range of usable tones at just about any setting of the Bass and Treble controls, but here are a few sample settings to get you started:

### 1960s Clean Tone

| Volume | Treble | Bass |
|---|---|---|
| 3 | 4 | 6 |

### "Pushed" Clean Tone

| Volume | Treble | Bass |
|---|---|---|
| 6 | 3 | 3 |

## Lead Channel

The Lead channel starts out with a Tweed style preamp, which drives a proprietary tone-shaping circuit built around the Mid-Bite control, a unique Tone King feature. This proprietary circuit transforms the basic tweed tone to more of a crunchy rock tone as you turn up the mid-bite control. This is accomplished by simultaneously tightening up the bass, rolling off the very high frequencies, increasing the gain, and developing a pronounced upper midrange peak. The Mid-Bite control is the key to dialing in your own particular sound on the lead channel, so you may want to experiment and observe its effect as you rotate it from 1 to 9.

When you are using the attenuator to reduce the volume of the lead channel, you'll notice that the speaker acts differently at low volume than it does at high volume. At low volume, you don't get the benefit of speaker breakup and compression to smooth and round out the distortion tone. A good way to compensate for this is to turn down the Tone control a bit, though the compensation necessary depends a lot on the acoustical environment. You may or may not find it necessary to make adjustments of this sort.

Here are a few sample settings which demonstrate just a few of the tones available with the Lead channel:

### Old Style Tweed Clean

| Volume | Tone | Mid-Bite |
|---|---|---|
| 3 | 5 | 1 |

### Cranked Tweed

| Volume | Tone | Mid-Bite |
|---|---|---|
| 5 | 4 | 1.5 |

### Rock Grind

| Volume | Tone | Mid-Bite |
|---|---|---|
| 7 | 5 | 5 |

### Thick, Chunky Mids – Hot Tweed

| Volume | Tone | Mid-Bite |
|---|---|---|
| 7 | 5 | 9 |

## Reverb

The Imperial includes a built in 2-spring, tube-driven reverb circuit. Reverb is applied to both the Rhythm and Lead channels. In order to compensate for the higher gain of the Lead channel, the reverb drive is reduced slightly on the Lead channel. This reduction helps to match the reverb level when switching between preamp channels, when the Lead channel is being driven hard and the Rhythm channel is set for a clean tone.

The Reverb level is controlled by the front panel Reverb control, which adjusts the amount of the reverb signal which is mixed into the signal path.

## Tremolo (Rate & Depth)

The Imperial's tremolo circuit is a modified form of the old-fashioned "bias modulation" tremolo circuit. This circuit achieves the tremolo effect by varying the bias of the output tubes. This type of tremolo was used in all Tone King amps going back to 1993. However, the 20th Anniversary Imperial uses a modified form of this circuit which virtually eliminates the "thumping" and other sonic effects that are typical for this type of effect.

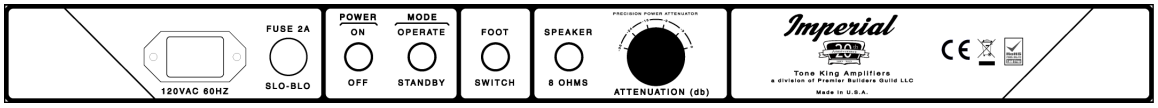
This type of tremolo circuit gives you a nicely rounded effect, but it is quite subtle when compared to an opto-coupler tremolo (as would be found in, for example, a Fender Twin Reverb).

The "Depth" control varies the intensity of the modulation effect, and the "Rate" knob controls the speed of the effect.

If the footswitch is not being used, then the tremolo circuit is active all the time, so you will need to turn the "Depth" knob all the way down if you do not wish to use tremolo.

When the footswitch is plugged in, you can turn the tremolo on and off with the footswitch. An LED shows the status of the effect (LED on = tremolo on)

# 2. Back Panel Controls




## AC Power

Always use a grounded AC cord, and make sure that a proper ground connection is supplied to the amp. Never attempt to lift or defeat the ground connection to the amp.

## Fuse

A standard 2A slo-blo fuse (style 3AG) should be used.

## Power Switch, Standby Switch

When powering up the amp, you should start with both the Power and Standby switches in the "off" position.

First, turn on the Power switch. This will apply power only to the tube filaments and the low-voltage circuitry.

After turning on the Power switch, allow the tubes to warm up for about 1 minute, then turn on the Standby switch.

The power-down sequence is not as important as the power-up sequence. When turning the amp off, you may turn Power off before Standby, or turn Standby off before Power, or turn them both off at the same time.

## Footswitch

Connect the footswitch to the amp with the supplied cable, or with any standard ¼" TRS (Stereo) -to- ¼" TRS (Stereo) cable.

The footwitch allows you to control both the preamp channel selection and the tremolo on/off. LEDs indicate the current switching status, as follows:

Channel switch: LED on = Lead channel
Tremolo switch: LED on = Tremolo on

When using the footswitch, make sure to set the front panel Channel switch to the Rhythm position.

## Speaker Jack

The Imperial has a single speaker jack with an impedance of 8 Ohms. If you wish to use an extension cabinet, it's best to use an 8-ohm cabinet. You can connect it with a standard ¼" mono speaker cable by pulling out the plug from the internal speaker, and plugging the cable into the speaker jack.

If desired or necessary, you may safely mismatch the impedance by as much as doubling or halving the selected impedance. Mismatching beyond this is not recommended. For example, you may you may safely use a total speaker load as low as 4 ohms or as high as 16 ohms.

## Attenuation Control

The Imperial contains a built-in Ironman precision attenuator with a single attenuation control. The attenuator allows you to reduce the volume level of the amplifier while allowing its output tubes to operate at full output power, for natural power tube overdrive and distortion. This attenuator uses transformer coupling and a precision tuned reactive load to best preserve the natural tone and feel of the amp, even at very low volume. This is the same general approach used in the highly regarded Ironman standalone attenuator.

There are many different approaches that can be used to generate overdriven and distorted tones as a low volume. For example, master volume circuits, or a power reduction scheme such as London Power Scaling have both used successfully on various amp models of other brands. However, for the more vintage sounding tones that the Imperial is designed to achieve, a good quality attenuator such as the built-in Ironman is the best way to preserve tone and feel at very low volume.

The attenuation control determines the amount of power sent to the speaker, but does not affect the operation of the output stage of the amplifier itself. The attenuator absorbs and dissipates any excess power generated by the output tubes that is not sent to the speaker.

The attenuator is internally connected between the amplifier output and the speaker jack – the same way an external attenuator would be connected. However, the input of the attenuator is not accessible, so you cannot use the built-in Ironman attenuator to attenuate the output of some other amplifier.

This particular variation of the Ironman is designed with one attenuation control, which acts globally to control the volume level no matter which preamp channel is selected.

## Notes on using the attenuator

At the 0db setting, the attenuator is completely bypassed – the speaker is connected directly to the output transformer secondary, and the attenuator circuitry is completely disconnected from the signal path.

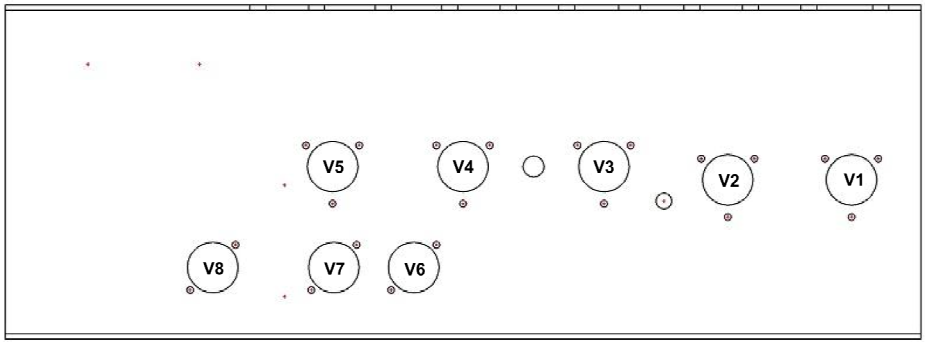
Although the Ironman attenuator does an excellent job of reducing output power without changing the tone of the amp's circuitry, there are other variables in play at lower volume which do result in some apparent tone change. Here are a few factors that you should be aware of -

Speaker breakup and compression is a big part of the tone and feel of the amp when played at high volume. At low power settings, the speaker responds differently, and does not break up and compress as it does at high power.

The ear's natural response curve varies at different volume levels, which changes the way you perceive sounds at different volume levels. Quieter sounds tend to give the impression of having less bass content.

At lower volume, there is a tendency to hit the guitar strings harder and play more aggressively than you would if the amp were tuned up very loud. It may take some time to get used to maintaining your playing style at reduced volume.

# 3. Tube Installation and Replacement




## Choice of Tube Types and Brands

I currently recommend the following tube types:

| No. | Type and Brand | Function |
|---|---|---|
| V1 | TAD 12AX7A-C/Tung Sol 12AX7A | Stage 1 (Rhythm+Lead), Stage 2 (Lead) |
| V2 | TAD 12AX7A-C/Tung Sol 12AX7A | Stage 2 (Rhythm), Stage 3 (Lead) |
| V3 | EH 12AT7 | Reverb Driver |
| V4 | TAD 12AX7A-C/Tung Sol 12AX7A | Reverb receiver |
| V5 | TAD 12AX7A-C/Tung Sol 12AX7A | Phase Inverter |
| V6-V7 | TAD 6V6 | Output Tubes |
| V8 | TAD/Sovtek 5AR4 | Rectifier |

The tube brands shown above are my own preferences. You may want to use other brands, to tailor the sound to your own tastes. Here are a few notes on the various brands available today:

### 6V6 WARNING !

The following brands are NOT recommended, as we've experienced a high rate of red-plating and short circuit faults with these:

- Tung Sol 6V6GT
- EH 6V6GT manufactured after December 2014

We had been recommending EH brand 6V6s for years. These were great tubes, but some time around December 2014, the manufacturer changed the design , and they now appear to share the same construction as the Tung Sol 6V6. After the design change, we noticed the same reliability problems as the Tung Sol 6V6, so we no longer recommend using the EH 6V6 of current manufacture.

### 6V6 Tube Choices:

I prefer the TAD 6V6 for its warmth, smooth compression, and balanced top end.

The JJ brand 6V6 is another acceptable choice. The JJ 6V6 has a bigger, fatter sound than the TAD, but is a bit less lively sounding, and has a more muted top end. It sounds a bit more like a 6L6 than a 6V6.

**12AX7 Tubes:**

Both the TAD 12AX7A-C, and the Tung Sol 12AX7A are a great match for the 20th Anniversary Imperial. Both have a nice balance of detail and warmth, with the Tung Sol having perhaps a bit more transparency in the top end, and the TAD having a bit less glassiness but still a nice presence in the upper mids.

EH 12AX7s are very similar to Tung Sol 12AX7s – both are very quiet with very low microphonics and are a bit on the bright side, with an extended top end. Tung Sols seem a bit warmer than EHs.

The Svetlana 12AX7, a short-plate tube, has nearly the clarity of the 12AX7EH, and slightly more bottom end, but is a bit congested in the midrange. Years ago, I had selected this brand as the brand of choice for the Meteor/II amp, but later changed to a combination of the 12AX7EH and the 12AX7LPS.

Sovtek 12AX7LPS – this long-plate 12AX7 has a big, warm sound that comes close to a good NOS long-plate 12AX7. However, this tube can tend to be microphonic.

## Alternate Tube Choices You May Want to Try

Reducing Gain: If you find the preamp too gainy, and you find that you're setting the volume controls down quite low to get sufficient clean headroom, you may want to try swapping in a 12AU7 in the V2 position. You can reduce the gain further by swapping a 12AU7 into the V1 position as well.

Adding Sag / More Compression: If you'd like a little less output power, and a little looser feel, you might try changing the rectifier tube to a 5Y3. My preference is an old NOS RCA 5Y3 – these sound better than current production 5Y3s.

## Installing Tubes

When installing tubes, you may find it helpful to lay the amp on its face (speaker pointing toward the ground), on a table, and shine a light directly into the back of the amp, to aid in locating the position of each tube. Tubes must be installed in the correct orientation. The smaller, all-glass tubes have a blank space in the ring of pins which must line up with the blank space in the ring of tube pins in the tube socket, located on the chassis. The larger, bakelite-base tubes have a small cylinder with an indexing key in the center of the ring of tube pins, and this indexing key must match up with the corresponding slot in the socket on the chassis.

## Replacing Output Tubes

The output stage of the Imperial is fully cathode biased, and no bias adjustment is necessary when changing output tubes. The design of the Imperial's output stage allows a fair amount of margin for variation in tube characteristics, so any known brand of 6V6 can be installed, and will work properly and be appropriately self-biased.

## Tube Quality

Currently manufactured tubes are built in China, Russia, or the Czech Republic, and are not built to the same quality standards as tubes manufactures by the U.S. manufacturers in the "glory days" of tube manufacturing.

We musicians choose to use to vacuum tubes because of their tone, but we need to accept that the tubes available to us these days can be imperfect devices, and are most certainly the least reliable component in the entire amplifier.

It would seem that the obvious solution would be to use new-old-stock tubes that were made back in the "glory days", when tubes were properly made. However, I've lately been finding that much of the available stocks of such "new old stock" tubes are either gassy, noisy, or unreliable – I do believe that we've reached the bottom of the barrel of NOS tubes.

Tube problems generally reveal themselves as a crackling noise which can occur continuously, sporadically, in response to mechanical vibration, or in response to your playing (e.g. a crackling or other type of noise which occurs only when you hit a note).

We subject all tubes to a thorough burn-in and test procedure to ensure that they are fully up to spec and operating perfectly. However, you must be aware that the majority of tube failures occur early in their life, and may come about as a result of the jostling and jarring that an amp can receive in shipping. In spite of the exhaustive testing we perform at the shop, early-life tube problems cannot always be found in such testing. The first two months or so are the most tenuous period for any set of tubes. Most manufacturing defects will be revealed in the first two months of their life, but many are not detectable in initial testing, even after a burn-in period.

If you notice any noises, cracking, or any other odd behavior of your amplifier in this period, note that it is most likely to be the result of a defective tube, and should be debugged as such.

# Premier Builders Guild LLC

Limited Warranty

Premier Builders Guild LLC
201 S. Highland Avenue, Suite 204
Pittsburgh, PA 15206

This warranty gives you specific legal rights; you may also have other rights which vary from state to state. There are no express warranties except those listed below.

## Length of Warranty

This warranty shall remain in effect for five years from the date of sale of the product as shown on the original bill of sale.

## What is Covered

This warranty covers all defects in material and workmanship in this product, with the following exceptions:

1. Damage or deterioration of the cabinet, or any other cosmetic damage which occurs after delivery is not covered by this warranty.
2. Damage after initial delivery resulting from accident, unreasonable use, or neglect, is not covered by this warranty.
3. Damage resulting from the performance of repairs by someone other than the Tone King Amplifier Company is not covered by this warranty.
4. Damage occurring during shipment or delivery of this product to the Tone King Amplifier Company after initial delivery of the product is not covered by this warranty.
5. Vacuum tubes are considered a user-replaceable item, as they are expected to wear out and require replacement over a reasonable period of time. Tubes are warranted to be serviceable for a period of 90 days from the date of sale.
6. The speaker(s) in this amplifier has(have) been selected for use only with this amplifier. If the speaker(s) of this amplifier is(are) connected to an amplifier other than the intended amplifier, any warranty of this speaker shall be deemed void.

## What We Will Pay For

The Tone King Amplifier Company will pay for all labor and material expenses to fix or replace all items covered under this warranty. The customer will pay shipping charges to return the product to the Tone King Amplifier Company. If the necessary repairs are covered under this warranty, the Tone King Amplifier Company will pay any shipping charges required to return the product to the customer.

## Limitation of Implied Warranties

All express or implied warranties of merchantability and fitness for a particular purpose are limited in duration to the length of this warranty, unless otherwise provided by state law.

## Exclusion of Certain Damages

The Tone King Amplifier Company's liability is limited to the repair or replacement, at our option, of any defective product, and shall in no event include incidental or consequential damages of any kind. Some states do not allow limitations on the length of an implied warranty and/or do not allow the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

## Obtaining Warranty Service

If your unit requires service, it should be returned to the Tone King Amplifier Company at the address listed above. Before returning the unit, you must contact the Tone King Amplifier Company and obtain return authorization.

# CE Declaration

Premier Builders Guild, LLC
201 S. Highland Avenue, Suite 204
Pittsburgh, PA 15206
412-362-0309

CE

**DECLARATION OF CONFORMITY**
**Report #R070212**

We, Premier Builders Guild, in coordination with CES Laboratories, declare, taking this declaration under our total responsibility, that the below models are in conformity with the provisions of the following EC Directive(s) when installed in accordance with the installation instructions contained in the product documentation:

2006/95/EEC Low Voltage Directive
2004/108/EEC EMC Directive
2011/65/EEC RoHS-Directive

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And that the standards and/or technical specifications have been applied to the following families of products:

| | |
|---|---|
| Imperial | Metropolitan |
| Galaxy | Falcon |
| Sky King | Royalist |
| Imperial MK II | Falcon Grande |

Manufacturer/Importer
Date: 8/25/2015

Signature: Christopher W. Fleming

Name and Title: Christopher W. Fleming
V.P. PROJECT ENGINEERING

Approved By:
Chandra Garudachar
President
CES LABORATORIES

Prepard By:
Jyotsna Bedi
23361 Cypress Pt
Mission Viejo, CA 92692